

## REMARKS

An Office Action was mailed in the above-captioned application on June 6, 2005. Claims 1-5, 7-10, 15-17 and 87-96 are pending. Claims 1-5, 7-10, 16, 17 and 87-96 stand rejected. Claim 15 is allowed. The foregoing amendment and the following remarks are submitted in response to the Office Action of June 6, 2005.

### **Rejection of claims 1-5, 7-10, 16, 17 and 87-96**

Claims 1-5, 7-10, 16, 17 and 87-96 stand rejected under 35 USC § 103(a) as being unpatentable over Doudin *et al.* [NanoStructured Materials 6:521 (1995)]. The Examiner contends that Doudin shows template synthesis of alternated different metals, resulting in wire preparation via electro deposition in membrane pores. The Examiner further contends that the Doudin process will result in the preparation of free standing particles as instantly claimed when combined with releasing the particle from its template.

Applicant does not admit that Doudin teaches free standing particles as previously claimed. To meet the pending claim rejection however, Applicant has amended claims 1 and 88 to recite that the particle contains informational content based on the composition of the particle. In addition, Applicant presents new claims 97 and 98 directed to particles as electronic devices as discussed below.

### **The Informational Content Amendment to Claims 1 and 88**

Applicant has amended claims 1 and 88 to include the following limitation, "and wherein the particle contains informational content based on the composition of the particle." Informational content is analogous to macroscopic bar-coding. As is described in detail in the specification, informational content allows the particles of the present invention to be used as identifying tags that can be attached to a material and subsequently read for identification purposes.

The Doudin reference does not teach or suggest that the segments of a particle fabricated according to the Doudin methods contain informational content. The authors of the Doudin reference are primarily interested in the magnetoresistance of the Doudin particles (see page 524). Magnetoresistance is a physical property of a substance where resistance changes in the presence of a magnetic field. Doudin specifically states that the composite structures described in his paper exhibit the giant magnetoresistance effect (see abstract). The giant magnetoresistance effect was discovered in 1988 and is a phenomenon where resistance of a

typically layered material drops dramatically as a magnetic field is applied. Giant magnetoresistance has been the subject of huge international research efforts primarily focused in the data storage industry. For example, virtually all hard disc drives made today use giant magnetoresistance technology.

Magnetoresistance and giant magnetoresistance are physical properties of matter, and do not relate to specifically encoded informational content. Thus, Doudin does not suggest or teach the elements of claims 1 or 88 as amended.

Support for the current amendment to claims 1 and 88 exists throughout Applicant's specification. For example, please see page 7, lines 5-8,

"[a]lthough in certain embodiments of the invention, the particle's composition contains informational content, this is not true for all embodiments of the invention."

See also page 12, line 28 to page 13, line 9 and page 15, lines 9-18,

"In those embodiments where the segments have informational content, the best analogy is to macroscopic bar coding. Conventional bar coding provides for a strip of black lines whereby the distance between lines and thickness of the lines are used to "code" a significant amount of information. Because of the small size of the particles of the present invention, in certain embodiments it is possible to use the particles of the invention as molecular tags. Unique identifying tags that can be "read" can be attached to any material including to molecular entities in order to track molecular events."

#### **New Claims 97-98 Relating to Electronic Devices**

Claims 16 and 17 stand rejected because, in the Examiner's opinion, "The wires of the (Doudin) reference are suggested and motivated as being used in electronic applications on page 521, paragraph after the abstract and on page 524, first paragraph, describing GMR usage." The Doudin reference does describe the giant magnetoresistance properties of the Doudin particles. For example, Doudin quantifies the magnetoresistance properties exhibited by his particles as a function of temperature and layer thicknesses. (See Fig. 3). Doudin concludes that his particles might be useful for the basic study of magnetoresistance effects which are still not particularly well understood. Doudin specifically states that, "The study of the magnetoresistance as a function temperature and layer thickness (Fig. 3) can bring out more insight into the understanding of the still controversial subject of GMR, helping us to separate bulk and interface

contributions to magnetoresistance. Thus, Doudin can best be described as teaching and motivating a potentially useful research tool, but not an electronic device.

Applicant, on the other hand, enables the use of his particles as active or passive electronic devices or portions of electronic devices. Claims 97 and 98 have been added with the foregoing amendment to recite the electronic device aspects of Applicant's invention. Claims 97 and 98 do not include the informational content limitation of claim 1. Claims 97 and 98 are commensurate in scope with previously presented claims 16 and 17, which are cancelled herein.

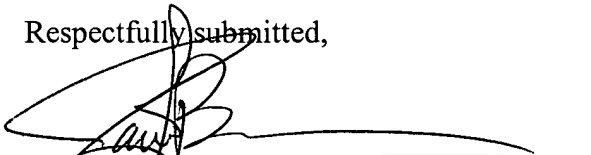
Support for new claims 97 and 98 exists in the specification at page 49, line 20 through page 51, lines 15, wherein electronic devices including wires, resistors, capacitors, diodes, transistors, negative differential resistance devices, resonant tunneling diodes, ferroelectric switches, shift registers and delay lines are specifically enabled. Example 12 of the specification at page 51, line 6, describes the creation of a nanoscale diode.

None of the foregoing listed classes of electronic devices is taught or suggested by the Doudin reference. As discussed above, Doudin merely describes and quantifies certain magnetoresistance effects observed with respect to particles fabricated as described within the reference.

For the reasons set forth above, Applicant respectfully submits the claims as amended are allowable over the art of record and reconsideration and issuance of a notice of allowance are respectfully requested. If it would be helpful to obtain favorable consideration of this case, the Examiner is encouraged to call and discuss this case with the undersigned.

This constitutes a request for any needed extension of time and an authorization to charge all fees therefore to deposit account No. 19-5117 if not otherwise specifically requested. The undersigned hereby authorizes the charge of any required fees not included or any deficiency of fees submitted herewith to be charged to deposit account No. 19-5117.

Respectfully submitted,



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James L. Brown, 48,576  
Swanson & Bratschun, L.L.C.  
1745 Shea Center Drive, Suite 330  
Highlands Ranch, Colorado 80129  
(303) 268-0066

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